

The Policy Driven Data Center With AcI Architecture Concepts And Methodology Networking Technology

Improve Manageability, Flexibility, Scalability, and Control with Hyperconverged Infrastructure Hyperconverged infrastructure (HCI) combines storage, compute, and networking in one unified system, managed locally or from the cloud. With HCI, you can leverage the cloud's simplicity, flexibility, and scalability without losing control or compromising your ability to scale. In Hyperconverged Infrastructure Data Centers, best-selling author Sam Halabi demystifies HCI technology, outlines its use cases, and compares solutions from a vendor-neutral perspective. He guides you through evaluation, planning, implementation, and management, helping you decide where HCI makes sense, and how to migrate legacy data centers without disrupting production systems. The author brings together all the HCI knowledge technical professionals and IT managers need, whether their background is in storage, compute, virtualization, switching/routing, automation, or public cloud platforms. He explores leading solutions including the Cisco HyperFlex platform, VMware vSAN, Nutanix Enterprise Cloud, Cisco Application-Centric Infrastructure (ACI), VMware's NSX, the open source OpenStack and Open vSwitch (OVX) / Open Virtual Network (OVN), and Cisco CloudCenter for multicloud management. As you explore discussions of advanced management, and other key HCI capabilities, you'll discover powerful new opportunities to improve control, security, agility, and performance. Understand and overcome key limits of traditional data center designs Discover improvements made possible by advances in compute, bus interconnect, virtualization, and software-defined storage Simplify rollouts, management, and integration with converged infrastructure (CI) based on the Cisco Unified Computing System (UCS) Explore HCI functionality, advanced capabilities, and benefits Evaluate key HCI applications, including DevOps, virtual desktops, ROBO, edge computing, Tier 1 enterprise applications, backup, and disaster recovery Simplify application deployment and policy setting by implementing a new model for provisioning, deployment, and management Plan, integrate, deploy, provision, manage, and optimize the Cisco HyperFlex hyperconverged infrastructure platform Assess alternatives such as VMware vSAN, Nutanix, open source OpenStack, and OVX/OVN, and compare architectural differences with HyperFlex Compare Cisco ACI (Application- Centric Infrastructure) and VMware NSX approaches to network automation, policies, and security This book is part of the Networking Technology Series from Cisco Press, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

"This book covers a wide spectrum of topics relevant to implementing and managing a modern data center. The chapters are comprehensive and the flow of concepts is easy to understand." -Cisco reviewer Gain a practical knowledge of data center concepts To create a well-designed data center (including storage and network architecture, VoIP implementation, and server consolidation) you must understand a variety of key concepts and technologies. This book explains those factors in a way that smoothes the path to implementation and management. Whether you need an introduction to the technologies, a refresher course for IT managers and data center personnel, or an additional resource for advanced study, you'll find these guidelines and solutions provide a solid foundation for building reliable designs and secure data center policies. * Understand the common causes and high costs of service outages * Learn how to measure high availability and achieve maximum levels * Design a data center using optimum physical, environmental, and technological elements * Explore a modular design for cabling, Points of Distribution, and WAN connections from ISPs * See what must be considered when consolidating data center resources * Expand your knowledge of best practices and security * Create a data center environment that is user- and manager-friendly * Learn how high availability, clustering, and disaster recovery solutions can be deployed to protect critical information * Find out how to use a single network infrastructure for IP data, voice, and storage

This latest textbook from bestselling author, Douglas E. Comer, is a class-tested book providing a comprehensive introduction to cloud computing. Focusing on concepts and principles, rather than commercial offerings by cloud providers and vendors, The Cloud Computing Book: The Future of Computing Explained gives readers a complete picture of the advantages and growth of cloud computing, cloud infrastructure, virtualization, automation and orchestration, and cloud-native software design. The book explains real and virtual data center facilities, including computation (e.g., servers, hypervisors, Virtual Machines, and containers), networks (e.g., leaf-spine architecture, VLANs, and VXLAN), and storage mechanisms (e.g., SAN, NAS, and object storage). Chapters on automation and orchestration cover the conceptual organization of systems that automate software deployment and scaling. Chapter on cloud-native software cover parallelism, microservices, MapReduce, controller-based designs, and serverless computing. Although it focuses on concepts and principles, the book uses popular technologies in examples, including Docker containers and Kubernetes. Final chapters explain security in a cloud environment and the use of models to help control the complexity involved in designing software for the cloud. The text is suitable for a one-semester course for software engineers who want to understand cloud, and for IT managers moving an organization's computing to the cloud.

The definitive guide to UCS and the Cisco® Data Center Server: planning, architecture, components, deployment, and benefits With its new Unified Computing System (UCS) family of products, Cisco has introduced a fundamentally new vision for data center computing: one that reduces ownership cost, improves agility, and radically simplifies management. In this book, three Cisco insiders thoroughly explain UCS, and offer practical insights for IT professionals and decision-makers who are evaluating or implementing it. The authors establish the context for UCS by discussing the implications of virtualization, unified I/O, large memories and other key technologies, and showing how trends like cloud computing and green IT will drive the next-generation data center. Next, they take a closer look at the evolution of server CPU, memory, and I/O subsystems, covering advances such as the Intel® Xeon® 5500, 5600, 7500, DDR3 memory, and unified I/O over 10 Gbps Ethernet. Building on these fundamentals, the authors then discuss UCS in detail, showing how it systematically overcomes key limitations of current data center environments. They review UCS features, components, and architecture, and demonstrate how it can improve data center performance, reliability, simplicity, flexibility, and energy efficiency. Along the way, they offer realistic planning, installation, and migration guidance: everything decision-makers and technical implementers need to gain maximum value from UCS—now, and for years to come. Silvano Gai has spent 11 years as Cisco Fellow, architecting Catalyst®, MDS, and Nexus switches. He has written several books on networking, written multiple Internet Drafts and RFCs, and is responsible for 80 patents and applications. He teaches a course on this book's topics at Stanford University. Tommi Salli, Cisco Technical Marketing Engineer, has nearly 20 years of experience with servers and applications at Cisco, Sun, VERITAS, and Nuova Systems. Roger Andersson, Cisco Manager, Technical Marketing, spent more than 12 years in the CLARIION® Engineering Division at EMC, and 5 years as Technical Product Manager at VERITAS/Symantec. He is now focused on Cisco UCS system management. Streamline data centers with UCS to systematically reduce cost of ownership Eliminate unnecessary server components and their setup, management, power, cooling, and cabling Use UCS to scale service delivery, simplify service movement, and improve agility Review the latest advances in processor, memory, I/O, and virtualization architectures for data center servers Understand the specific technical advantages of UCS Integrate UCS 6100 Fabric Interconnect, Cisco UCS 2100 Series Fabric Extenders, UCS 5100 Series Blade Server Enclosures, UCS B-Series Blade Servers, UCS C-Series Rack Servers, and UCS Adapters Use Cisco UCS Manager to manage all Cisco UCS components as a single, seamless entity Integrate third-party management tools from companies like BMC®, CA®, EMC®, IBM®, Microsoft®, and VMware® Practice all this with a copy of Cisco Unified Computing System™ Platform Emulator Lite (UCSPE Lite) on the DVD in the back of the book This book is part of the Networking Technology Series from Cisco Press®, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

A Roadmap for Usage and Exploitation of Big Data in Europe**Data Center Fundamentals****Exam 67 Offic Cert ePub 1****Deploying ACI****Data-Driven Innovation Big Data for Growth and Well-Being****Intent-based Networking for the Enterprise**

The Art of Network Architecture Business-Driven Design The business-centered, business-driven guide to architecting and evolving networks The Art of Network Architecture is the first book that places business needs and capabilities at the center of the process of architecting and evolving networks. Two leading enterprise network architects help you craft solutions that are fully aligned with business strategy, smoothly accommodate change, and maximize future flexibility. Russ White and Denise Donohue guide network designers in asking and answering the crucial questions that lead to elegant, high-value solutions. Carefully blending business and technical concerns, they show how to optimize all network interactions involving flow, time, and people. The authors review important links between business requirements and network design, helping you capture the information you need to design effectively. They introduce today's most useful models and frameworks, fully addressing modularity, resilience, security, and management. Next, they drill down into network structure and topology, covering virtualization, overlays, modern routing choices, and highly complex network environments. In the final section, the authors integrate all these ideas to address key design challenges: user mobility, cloud services, Software Defined Networking (SDN), and today's radically new data center environments.
• Understand how your choices of technologies and design paradigms will impact your business
• Customize designs to improve workflows, support BYOD, and ensure business continuity
• Use modularity, simplicity, and network management to prepare for rapid change
• Build resilience by addressing human factors and redundancy
• Design for security, hardening networks without making them brittle
• Minimize network management pain, and maximize gain
• Compare topologies and their tradeoffs
• Consider the implications of network virtualization, and walk through an MPLS-based L3VPN example
• Choose routing protocols in the context of business and IT requirements
• Maximize mobility via ILM, LISP, Mobile IP, host routing, MANET, and/or DDNS
• Learn about the challenges of removing and changing services hosted in cloud environments
• Understand the opportunities and risks presented by SDNs
• Effectively design data center control planes and topologies
We overspend on data center storage yet, we fall short of business requirements. It's not about the technologies. It's about the proper application of technologies to deliver storage services efficiently and affordably. It's about meeting business requirements dependent on data center storage. Spend less, deliver more. Data Center Storage: Cost-E

CCNA Data Center DCIC2 200-155 Official Cert Guide from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. A team of leading Cisco data center experts shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This is the eBook edition of the CCNA Data Center DCIC2 200-155 Official Cert Guide. This eBook does not include the access code for the practice exam that comes with the print edition. This complete, official study package includes A test-preparation routine proven to help you pass the exam "Do I Know This Already?" quizzes, which enable you to decide how much time you need to spend on each section Part-ending exercises, which help you drill on key concepts you must know thoroughly Study plan suggestions and templates to help you organize and optimize your study time A final preparation chapter that guides you through tools and resources to help you craft your review and test-taking strategies Well regarded for its level of detail, study plans, assessment features, and challenging review questions and exercises, this official study guide helps you master the concepts and techniques that ensure your exam success. The official study guide helps you master topics on the CCNA Data Center DCIC2 200-155 exam.

Despite the buzz surrounding the cloud computing, only a small percentage of organizations have actually deployed this new style of IT—so far. If you're planning your long-term cloud strategy, this practical book provides insider knowledge and actionable real-world lessons regarding planning, design, operations, security, and application transformation. This book teaches business and technology managers how to transition their organization's traditional IT to cloud computing. Rather than yet another book trying to sell or convince readers on the benefits of clouds, this book provides guidance, lessons learned, and best practices on how to design, deploy, operate, and secure an enterprise cloud based on real-world experience. Author James Bond provides useful guidance and best-practice checklists based on his field experience with real customers and cloud providers. You'll view cloud services from the perspective of a consumer and as an owner/operator of an enterprise private or hybrid cloud, and learn valuable lessons from successful and less-than-successful organization use-case scenarios. This is the information every CIO needs in order to make the business and technical decisions to finally execute on their journey to cloud computing. Get updated trends and definitions in cloud computing, deployment models, and for building or buying cloud services Discover challenges in cloud operations and management not foreseen by early adopters Use real-world lessons to plan and build an enterprise private or hybrid cloud Learn how to assess, port, and migrate legacy applications to the cloud Identify security threats and vulnerabilities unique to the cloud Employ a cloud management system for your enterprise (private or multi-provider hybrid) cloud ecosystem Understand the challenges for becoming an IT service broker leveraging the power of the cloud

ACI Advanced Monitoring and Troubleshooting**Day One Data Center Fundamentals****The Cloud Computing Book****Cloud Native Data Center Networking****IBM Data Center Networking: Planning for Virtualization and Cloud Computing****Cloud Networking****Advanced Multicast Concepts and Large-Scale Multicast Design**

Use policies and Cisco® ACI to make data centers more flexible and configurable—and deliver far more business value Using the policy driven data center approach, networking professionals can accelerate and simplify changes to the data center, construction of cloud infrastructure, and delivery of new applications. As you improve data center flexibility, agility, and portability, you can deliver far more business value, far more rapidly. In this guide, Cisco data center experts Lucien Avramov and Maurizio Portolani show how to achieve all these benefits with Cisco Application Centric Infrastructure (ACI) and technologies such as python, REST, and OpenStack. The authors explain the advantages, architecture, theory, concepts, and methodology of the policy driven data center. Next, they demonstrate the use of python scripts and

REST to automate network management and simplify customization in ACI environments. Drawing on experience deploying ACI in enterprise data centers, the authors review design considerations and implementation methodologies. You will find design considerations for virtualized datacenters, high performance computing, ultra-low latency environments, and large-scale data centers. The authors walk through building multi-hypervisor and bare-metal infrastructures, demonstrate service integration, and introduce advanced telemetry capabilities for troubleshooting. Leverage the architectural and management innovations built into Cisco® Application Centric Infrastructure (ACI) Understand the policy driven data center model Use policies to meet the network performance and design requirements of modern data center and cloud environments Quickly map hardware and software capabilities to application deployments using graphical tools—or programmatically, via the Cisco APIC API Increase application velocity: reduce the time needed to move applications into production Define workload connectivity instead of (or along with) subnets, VLAN stitching, and ACLs Use Python scripts and REST to automate policy changes, parsing, customization, and self-service Design policy-driven data centers that support hypervisors Integrate OpenStack via the Cisco ACI APIC OpenStack driver architecture Master all facets of building and operating multipurpose cloud architectures with ACI Configure ACI fabric topology as an infrastructure or tenant administrator Insert Layer 4-Layer 7 functions using service graphs Leverage centralized telemetry to optimize performance: find and resolve problems Understand and familiarize yourself with the paradigms of programmable policy driven networks

Organizations are looking for ways to get more out of their already strained IT infrastructure as they face new technological and economic pressures. They are also trying to satisfy a broad set of users (internal and external to the enterprise) who demand improvements in their quality of service (QoS), regardless of increases in the number of users and applications. Cloud computing offers attractive opportunities to reduce costs, accelerate development, and increase the flexibility of the IT infrastructure, applications, and services. Infrastructure as a service (IaaS) is the typical starting point for most organizations when moving to a cloud computing environment. IaaS can be used for the delivery of resources such as compute, storage, and network services through a self-service portal. With IaaS, IT services are delivered as subscription services and driving down front costs. IBM® is enabling the Cloud Computing Reference Architecture (CCRA) based on years of experience of working with customers who have implemented cloud-computing solutions. The IBM CCRA is a blueprint or guide for architecting cloud-computing implementations. This IBM Redguide™ publication highlights the Cloud Enabled Data Center adoption pattern and describes how you can use it to define an IaaS solution. This guide is intended for chief technology officers, data center architects, IT architects, and application architects who want to understand the cloud-computing infrastructure necessary to support their applications and services by using an IaaS solution. It explains the technical and business benefits of a Cloud Enabled Data Center solution. It introduces a Cloud Enabled Data Center maturity model where each maturity level corresponds to an increase in the degree of automation and the cloud-computing capabilities that are available. In addition, this guide describes the architectural framework provided by the IBM CCRA and explains details about the Cloud Enabled Data Center adoption pattern.

Presents design strategies, operational approaches, and technologies to help data centers improve energy efficiency and become eco-friendly.

Use ACI fabrics to drive unprecedented value from your data center environment With the Cisco Application Centric Infrastructure (ACI) software-defined networking platform, you can achieve dramatic improvements in data center performance, redundancy, security, visibility, efficiency, and agility. In Deploying ACI, three leading Cisco experts introduce this breakthrough platform, and walk network professionals through all facets of design, deployment, and operation. The authors demonstrate how ACI changes data center networking, security, and management: and offer multiple field-proven configurations. Deploying ACI is organized to follow the key decision points associated with implementing data center network fabrics. After a practical introduction to ACI concepts and design, the authors show how to bring your fabric online, integrate virtualization and external connections, and efficiently manage your ACI network. You'll master new techniques for improving visibility, control, and availability; managing multitenancy; and seamlessly inserting service devices into application data flows. The authors conclude with expert advice for troubleshooting and automation, helping you deliver data center services with unprecedented efficiency.

Understand the problems ACI solves and how it solves them Design your ACI fabric, build it, and interface with devices to bring it to life Integrate virtualization technologies with your ACI fabric Perform networking within an ACI fabric (and understand how ACI changes data center networking) Connect external networks and devices at Layer 2/Layer 3 levels Coherently manage unified ACI networks with tenants and application policies Migrate to granular policies based on applications and their functions Establish multitenancy, and evolve networking, security, and services to support it Integrate L4-7 services: device types, design scenarios, and implementation Use multisite designs to meet rigorous requirements for redundancy and business continuity Troubleshoot and monitor ACI fabrics Improve operational efficiency through

automation and programmability**Architecture, Protocol, and Tools****97 Things Every Cloud Engineer Should Know****IP Multicast, Volume II****Business-Driven Design****Data Center Storage****Cisco Unified Computing System (UCS) (Data Center)****Data Center 2.0**

Provides the fundamentals, technologies, and best practices in designing, constructing and managing mission critical, energy efficient data centers Organizations in need of high-speed connectivity and nonstop systems operations depend upon data centers for a range of deployment solutions. A data center is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes multiple power sources, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices. With contributions from an international list of experts, The Data Center Handbook instructs readers to: Prepare strategic plan that includes location plan, site selection, roadmap and capacity planning Design and build "green" data centers, with mission critical and energy-efficient infrastructure Apply best practices to reduce energy consumption and carbon emissions Apply IT technologies such as cloud and virtualization Manage data centers in order to sustain operations with minimum costs Prepare and practice disaster recovery and business continuity plan The book imparts essential knowledge needed to implement data center design and construction, apply IT technologies, and continually improve data center operations.

Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. CCNP Data Center Application Centric Infrastructure DCACI 300-620 Official Cert Guide presents you with an organized test-preparation routine using proven series elements and techniques. "Do I Know This Already?" quizzes open each chapter and enable you to decide how much time you need to spend on each section Topic lists make referencing easy Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly * Master CCNP Data Center Application Centric Infrastructure DCACI 300-620 exam topics * Assess your knowledge with chapter opening quizzes * Review key concepts with exam preparation tasks * Practice with realistic exam questions in the practice test software CCNP Data Center Application Centric Infrastructure DCACI 300-620 Official Cert Guide from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Leading Cisco data center technology expert Ammar Ahmadi shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This complete study package includes " A test-preparation routine proven to help you pass the exams " Do I Know This Already?" quizzes, which enable you to decide how much time you need to spend on each section * Chapter-ending exercises, which help you drill on key concepts you must know thoroughly * The powerful Pearson Test Prep Practice Test software, with two full exams comprised of well-reviewed, exam-realistic questions, customization options, and detailed performance reports " A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies * Study plan suggestions and templates to help you organize and optimize your study time * Video mentoring from the author's Complete Video Course Well regarded for its level of detail, study plans, assessment features, and challenging review questions and exercises, this official study guide helps you master the concepts and techniques that ensure your exam success. This official study guide helps you master all the topics on the CCNP Data Center Application Centric Infrastructure DCACI 300-620 exam. It tests your knowledge of Cisco switches in ACI mode, including - ACI fabric infrastructure - ACI packet forwarding - External network connectivity - Integrations - ACI management - ACI Anywhere Companion Website: The companion website contains two full practice exams, an interactive Flash Cards application, video mentoring from the author's Complete Video Course, and much more. Includes Exclusive Offers for Top to 80% Off Video Training, Practice Tests, and more Pearson Test Prep online system requirements: Browsers: Chrome version 40 and above; Firefox version 35 and above; Safari version 7; Internet Explorer 10, 11; Microsoft Edge; Opera. Devices: Desktop and laptop computers, tablets running on Android and iOS, smartphones with a minimum screen size of 4.7". Internet access required. Pearson Test Prep offline system requirements: Windows 10, Windows 8.1, Windows 7; Microsoft .NET Framework 4.5 Client; Pentium-class 1 GHz processor (or equivalent); 512 MB RAM; 650 MB disk space plus 50 MB for each downloaded practice exam; access to the Internet to register and download exam databases Also available from Cisco Press for CCNP Data Center DCACI study is the CCNP Data Center Application Centric Infrastructure DCACI 300-620 Official Cert Guide Premium Edition eBook and Practice Test. This digital-only certification preparation product combines an eBook with enhanced Pearson Test Prep Practice Test. This integrated learning package: " Allows you to focus on individual topic areas or take complete, timed exams * Includes direct links from each question to detailed tutorials to help you understand the concepts behind the questions * Provides unique sets of exam-realistic practice questions * Tracks your performance and provides feedback on a module-by-module basis, laying out a complete assessment of your knowledge to help you focus your study where it is needed most

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This book describes warehouse-scale computers (WSCs), the computing platforms that power cloud computing and all the great web services we use every day. It discusses how these new systems treat the datacenter itself as one massive computer designed at warehouse scale, with hardware and software working in concert to deliver good levels of internet service performance. The book details the architecture of WSCs and covers the main factors influencing their design, operation, and cost structure, and the characteristics of their software base. Each chapter contains multiple real-world examples, including detailed case studies and previously unpublished details of the infrastructure used to power Google's online services. Targeted at the architects and programmers of today's WSCs, this book provides a great foundation for those looking to innovate in this fascinating and important area, but the material will also be broadly interesting to those who just want to understand the infrastructure powering the internet. The third edition reflects four years of advancements since the previous edition and nearly doubles the number of pictures and figures. New topics range from additional workloads like video streaming, machine learning, and public cloud to specialized silicon accelerators, storage and network building blocks, and a revised discussion of data center power and cooling, and uptime. Further discussions of emerging trends and opportunities ensure that this revised edition will remain an essential resource for educators and professionals working on the next generation of WSCs.

Cisco ACI Cookbook**Administering Data Centers****How Access to Metadata is Transforming Policy Design****Zero Trust Networks****The Sustainable Data Center****Data Center Handbook****The Future of Computing Explained**

This report improves the evidence base on the role of Data Driven Innovation for promoting growth and well-being, and provide policy guidance on how to maximise the benefits of DDI and mitigate the associated economic and societal risks.

Data Center Virtualization Fundamentals For many IT organizations, today''s greatest challenge is to drive more value, efficiency, and utilization from data centers. Virtualization is the best way to meet this challenge. Data Center Virtualization Fundamentals brings together the comprehensive knowledge Cisco professionals need to apply virtualization throughout their data center environments. Leading data center expert Gustavo A. A. Santana thoroughly explores all components of an end-to-end data center virtualization solution, including networking, storage, servers, operating systems, application optimization, and security. Rather than focusing on a single product or technology, he explores product capabilities as interoperable design tools that can be combined and integrated with other solutions, including VMware vSphere. With the author''s guidance, you''ll learn how to define and implement highly-efficient architectures for new, expanded, or retrofit data center projects. By doing so, you can deliver agile application provisioning without purchasing unnecessary infrastructure, and establish a strong foundation for new cloud computing and IT-as-a-service initiatives. Throughout, Santana illuminates key theoretical concepts through realistic use cases, real-world designs, illustrative configuration examples, and verification outputs. Appendixes provide valuable reference information, including relevant Cisco data center products and CLI principles for IOS and NX-OS. With this approach, Data Center Virtualization Fundamentals will be an indispensable resource for anyone preparing for the CCNA Data Center, CCNP Data Center, or CCIE Data Center certification exams. Gustavo A. A. Santana, CCIE# No. 8806, is a Cisco Technical Solutions Architect working in enterprise and service provider data center projects that require deep integration across technology areas such as networking, application optimization, storage, and servers. He has more than 15 years of data center experience, and has led and coordinated a team of specialized Cisco engineers in Brazil. He holds two CCIE certifications (Routing & Switching and Storage Networking), and is a VMware Certified Professional (VCP) and SNIA Certified Storage Networking Expert (SCSN-E). A frequent speaker at Cisco and data center industry events, he blogs on data center virtualization at gustavaoasantana.net. Learn how virtualization can transform and improve traditional data center network topologies Understand the key characteristics and value of each data center virtualization technology Walk through key decisions, and transform choices into architecture Smoothly migrate existing data centers toward greater virtualization Burst silos that have traditionally made data centers inefficient Master foundational technologies such as VLANs, VRF, and virtual contexts Use virtual PortChannel and FabricPath to overcome the limits of STP Optimize cabling and network management with fabric extender (FEX) virtualized chassis Extend Layer 2 domains to distant data center sites using MPLS and Overlay

Transport Virtualization (OTV) Use VSANs to overcome Fibre Channel fabric challenges Improve SAN data protection, environment isolation, and scalability Consolidate I/O through Data Center Bridging and FCoE Use virtualization to radically simplify server environments Create server profiles that streamline "bare metal" server provisioning "Transcend the rack" through virtualized networking based on Nexus 1000V and VM-FEX Leverage opportunities to deploy virtual network services more efficiently Evolve data center virtualization toward full- fledged private clouds --Reviews -- "The variety of material that Gustavo covers in this work would appeal to anyone responsible for Data Centers today. His grasp of virtualization technologies and ability to relate it in both technical and non-technical terms makes for compelling reading. This is not your ordinary tech manual. Through use of relatable visual cues, Gustavo provides information that is easily recalled on the subject of virtualization, reaching across Subject Matter Expertise domains. Whether you consider yourself well-versed or a novice on the topic, working in large or small environments, this work will provide a clear understanding of the diverse subject of virtualization." -- Bill Dufresne, CCIE 4375, Distinguished Systems Engineer, Cisco (Americas) ".this book is an essential reference and will be valuable asset for potential cand. Dates pursuing their Cisco Data Center certifications. I am confident that in reading this book, individuals will inevitably gain extensive knowledge and hands-on experience during their certification preparations. If you''re looking for a truly comprehensive guide to virtualization, this is the one!" -- Yusuf Bhajji, Senior Manager, Expert Certifications (CCIE, CCDE, CCR), LearningCisco "When one first looks at those classic Cisco Data Center blueprints, it is very common to become distracted with the overwhelming number of pieces and linkages. By creating a solid theoretical foundation and providing rich sets of companion examples to illustrate each concept, Gustavo''s book brings huge back to IT Professionals from different areas of expertise. Apparently complex topics are demystified and the insertion of products, mechanisms, protocols and technologies in the overall Data Center Architecture is clearly explained, thus enabling you to achieve robust designs and successful deployments. A must read... Definitely!" -- Alexandre M. S. P. Moraes, Consulting Systems Engineer -- Author of "Cisco Firewalls"

The enterprise data center has evolved dramatically in recent years. It has moved from a model that placed multiple data centers closer to users to a more centralized dynamic model. The factors influencing this evolution are varied but can mostly be attributed to regulatory, service level improvement, cost savings, and manageability. Multiple legal issues regarding the security of data housed in the data center have placed security requirements at the forefront of data center architecture. As the cost to operate data centers has increased, architectures have moved towards consolidation of servers and applications in order to better utilize assets and reduce "server sprawl." The more diverse and redistributed the data center environment becomes, the more manageability becomes an issue. These factors have led to a trend of data center consolidation and resources on demand using technologies such as virtualization, higher WAN bandwidth technologies, and newer management technologies. The intended audience of this book is network architects and network administrators. In this IBM® Redbooks® publication we discuss the following topics: The current state of the data center network making the business drivers the case for change The unique capabilities and network requirements of system platforms The impact of server and storage consolidation on the data center network The functional overview of the main data center network virtualization and consolidation technologies The new data center network design landscape

If you create, manage, or configure systems running in the cloud, you're a cloud engineer—even if you work as a system administrator, software developer, data scientist, or site reliability engineer. With this book, professionals from around the world provide valuable insight into today's cloud engineering role. These concise articles explore the entire cloud computing experience, including fundamentals, architecture, and migration. You'll delve into security and compliance, operations and reliability, and software development. And examine networking, organizational culture, and more. You're sure to find 1, 2, or 97 things that inspire you to dig deeper and expand your own career. "Three Keys to Making the Right Multicloud Decisions," Brendan O'Leary "Serverless Bad Practices," Manages Jesus Galindo Bello "Failing a Cloud Migration," Lee Archison "Treat Your Cloud Environment as If It Were On Premises," Iyana Garry "What Is Toil, and Why Are SREs Obsessed with It?," Zachary Nickens "Lean QA: The QA Evolving in the DevOps World," Theresa Neate "How Economies of Scale Work in the Cloud," Jon Moore "The Cloud Is Not About the Cloud,"

Ken Corless "Data Gravity: The Importance of Data Management in the Cloud," Geoff Hughes "Even in the Cloud, the Network Is the Foundation," David Murray "Cloud Engineering Is About Culture, Not Containers," Holly Cummins**Architecture, Concepts, and Methodology****Cloud Data Centers and Cost Modeling****Cost-Effective Strategies, Implementation, and Management****NSX Data Center for SMBs****The Datacenter as a Computer****Cisco Digital Network Architecture**

Hyperconverged Infrastructure Data Centers

ACI Advanced Monitoring and Troubleshooting provides a solid conceptual foundation and in-depth technical knowledge for monitoring and troubleshooting virtually any problem encountered during testing, deployment, or operation of Cisco Application Centric Infrastructure (ACI) infrastructure. Authored by leading ACI support experts at Cisco, it covers all you'll need to keep your ACI deployment working optimally. Coverage includes: Core ACI concepts and components, including Nexus 9000 Series platforms, APIC controllers, and protocols In-depth insight into ACI's policy model ACI fabric design options: single and multiple data centers, stretched vs. multiple fabrics, and multi-pod/multi-site Automation, orchestration, and the cloud in ACI environments ACI topology and hardware/software specifications End host and network connectivity VMM integration Network management configuration, including SNMP, AAA, and SPAN Monitoring ACI fabrics and health Getting immediate results through the NX-OS command line interface Troubleshooting use cases: fabric discovery, APIC, management access, contracts, external connectivity, leaf/spine connectivity, end-host connectivity, VMM problems, ACI multi-pod/multi-site problems, and more

In the light of better and more detailed administrative databases, this open access book provides statistical tools for evaluating the effects of public policies advocated by governments and public institutions. Experts from academia, national statistics offices and various research centers present modern econometric methods for an efficient data-driven policy evaluation and monitoring, assess the causal effects of policy measures and report on best practices of successful data management and usage. Topics include data confidentiality, data linkage, and national practices in policy areas such as public health, education and employment. It offers scholars as well as practitioners from public administrations, consultancy firms and nongovernmental organizations insights into counterfactual impact evaluation methods and the potential of data-based policy and program evaluation.

The Policy Driven Data Center with ACIArchitecture, Concepts, and MethodologyCisco Press

Cloud Data Centers and Cost Modeling establishes a framework for strategic decision-makers to facilitate the development of cloud data centers. Just as building a house requires a clear understanding of the blueprints, architecture, and costs of the project; building a cloud-based data center requires similar knowledge. The authors take a theoretical and practical approach, starting with the key questions to help uncover needs and clarify project scope. They then demonstrate probability tools to test and support decisions, and provide processes that resolve key issues. After laying a foundation of cloud concepts and definitions, the book addresses data center creation, infrastructure development, cost modeling, and simulations in decision-making, each part building on the previous. In this way the authors bridge technology, management, and infrastructure as a service, in one complete guide to data centers that facilitates educated decision making. Explains how to balance cloud computing functionality with data center efficiency Covers key requirements for power management, cooling, server planning, virtualization, and storage management Describes advanced methods for modeling cloud computing cost including Real Option Theory and Monte Carlo Simulations Blends theoretical and practical discussions with insights for developers, consultants, and analysts considering data center development

Cloud Data Center Network Architectures and Technologies

Automating the Virtualized Data Center

Best Practices for Transforming Legacy IT

Building Secure Systems in Untrusted Networks

New Horizons for a Data-Driven Economy

Big Data for Growth and Well-Being

Over 90 recipes to maximize automated solutions and policy-drive application profiles using Cisco ACI About This Book Confidently provision your virtual and physical infrastructure for application deployment Integrate Cisco ACI with hypervisors and other third party devices Packed with powerful recipes to automate your IT operations Who This Book Is For If you are a network administrator, system administrator, or engineer and are aware of the basics of Cisco ACI but want to start using it to automate your tasks, then this book is for you What You Will Learn Master the Cisco ACI architecture Discover the ACI fabric with easy-to-follow steps Set up quality of service within ACI Configure external networks with Cisco ACI Integrate with VMware and track VMware virtual machines Configure apply and verify access policies Extend or migrate a VMware virtual-machine LAN inside the ACI fabric Monitor ACI with third party tools and troubleshoot issues In Detail Cisco Application Centric Infrastructure (ACI) is a tough architecture that automates IT tasks and accelerates data-center application deployments. This book focuses on practical recipes to help you quickly build, manage, and customize hybrid environment for your organization using Cisco ACI. You will begin by understanding the Cisco ACI architecture and its major components. You will then configure Cisco ACI policies and tenants. Next you will connect to hypervisors and other third-party devices. Moving on, you will configure routing to external networks and within ACI tenants and also learn to secure ACI through RBAC. Furthermore, you will understand how to set up quality of service and network programming with REST. XML, Python and so on. Finally you will learn to monitor and troubleshoot ACI in the event of any issues that arise. By the end of the book, you will gain have mastered automating your IT tasks and accelerating the deployment of your applications. Style and approach A set of exciting recipes to automate your IT operations related to datacenters, the Cloud, and networking tasks

Current data centre networks, based on electronic packet switches, are experiencing an exponential increase in network traffic due to developments such as cloud computing. Optical interconnects have emerged as a promising alternative offering high throughput and reduced power consumption. Optical Interconnects for Data Centers reviews key developments in the use of optical interconnects in data centres and the current state of the art in transforming this technology into a reality. The book discusses developments in optical materials and components (such as single and multi-mode waveguides), circuit boards and ways the technology can be deployed in data centres. Optical Interconnects for Data Centers is a key reference text for electronics designers, optical engineers, communications engineers and R&D managers working in this emerging field.Presents a comprehensive review of all the key aspects of deploying optical interconnects in data centers, from materials and components, to circuit boards and methods for integration Contains contributions that are drawn from leading international experts on the topic Master the basics of data centers to build server farms that enhance your Web site performance Learn design guidelines that show how to deploy server farms in highly available and scalable environments Plan site performance capacity with discussions of server farm architectures and their real-life applications to determine your system needs Today's market demands that businesses have an Internet presence through which they can perform e-commerce and customer support, and establish a presence that can attract and increase their customer base. Undersampled hit ratios, compromised credit card records, perceived slow Web site access, or the infamous "Object Not Found" alerts make the difference between a successful online presence and one that is bound to fail. These challenges can be solved in part with the use of data center technology. Data centers switch traffic based on information at the Network, Transport, or Application layers. Content switches perform the "best server" selection process to direct users' requests for a specific service to a server in a server farm. The best server selection process takes into account both server load and availability, and the existence and consistency of the requested content. Data Center Fundamentals helps you understand the basic concepts behind the design and scaling of server farms using data center and content switching technologies. It addresses the principles and concepts needed to take on the most common challenges encountered during planning, implementing, and managing Internet and intranet IP-based server farms. An in-depth analysis of the data center technology with real-life scenarios make Data Center Fundamentals an ideal reference for understanding, planning, and designing Web hosting and e-commerce environments.

The complete guide to transforming enterprise networks with Cisco DNA As networks become more complex and dynamic, organizations need better ways to manage and secure them. With the Cisco Digital Network Architecture, network operators can run entire network fabrics as a single, programmable system by defining rules that span their devices and move with their users. Using Cisco intent-based networking, you spend less time programming devices, managing configurations, and troubleshooting problems so you have more time for driving value from your network, your applications, and most of all, your users. This guide systematically introduces Cisco DNA, highlighting its business value propositions, design philosophy, tenets, blueprints, components, and solutions.Combining insider information with content previously scattered through multiple technical documents, it provides a single source for evaluation, planning, implementation, and operation. The authors bring together authoritative insights for multiple business and technical audiences. Senior executives will learn how DNA can help them drive digital transformation for competitive advantage. Technical decision-makers will discover powerful emerging solutions for their specific needs. Architects will find essential recommendations, interdependencies, and caveats for planning deployments. Finally, network operators will learn how to use DNA Center's modern interface to streamline, automate, and improve virtually any network management task. Accelerate the digital transformation of your business by adopting an intent-based network architecture that is open, extensible, and programmable. Integrate virtualization, automation, analytics, and cloud services to streamline operations and create new business opportunities. Dive deep into hardware, software, and protocol innovations that lay the programmable architecture foundation for DNA. Virtualize advanced network functions for fast, easy, and flexible deployments. Translate business intent into device configurations and simplify, scale, and automate network operations using controllers. Use analytics to tune performance, plan capacity, prevent fires, and simplify troubleshooting. Learn how Software-Defined Access improves network flexibility, security, mobility, visibility, and performance. Use DNA Assurance to track the health of clients, network devices, and applications to reveal hundreds of actionable insights. See how DNA Application Policy supports granular application recognition and end-to-end enforcement, for even encrypted applications. Identify malware, ransomware, and other threats in encrypted traffic.

CNP Data Center Application Centric Infrastructure 300-620 DCACI Official Cert Guide

The Art of Network Architecture

A Complete Reference Guide to the Cisco Data Center Virtualization Server Architecture

Understanding Cloud-based Data Center Networks

Optical Interconnects for Data Centers

Servers, Storage, and Voice over IP

Advanced Infrastructure Penetration Testing

The perimeter defenses guarding your network perhaps are not as secure as you think. Hosts behind the firewall have no defenses of their own, so when a host in the "trusted" zone is breached, access to your data center is not far behind. That's an all-too-familiar scenario today. With this practical book, you'll learn the principles behind zero trust architecture, along with details necessary to implement it. The Zero Trust Model treats all hosts as if they're internet-facing, and considers the entire network to be compromised and hostile. By taking this approach, you'll focus on building strong authentication, authorization, and encryption throughout, while providing compartmentalized access and better operational agility. Understand how perimeter-based defenses have evolved to become the broken model we use today Explore two case studies of zero trust in production networks on the client side (Google) and on the server side (PagerDuty) Get example configuration for open source tools that you can use to build a zero trust network Learn how to migrate from a perimeter-based network to a zero trust network in production

Cloud Data Center Network Architectures and Technologies has been written with the support of Huawei's vast technical knowledge and experience in the data center network (DCN) field, as well as its understanding of customer service requirements. This book describes in detail the architecture design, technical implementation, planning and design, and deployment suggestions for cloud DCNs based on the service challenges DCNs encounter. It starts by describing the overall architecture and technical evolution of DCNs, with the aim of helping readers understand the development of DCNs. It then proceeds to explain the design and implementation of cloud DCNs, including the service model of a single data center (DC), construction of physical and logical networks of DCs, construction of multiple DCNs, and security solutions of DCNs. Next, this book dives deep into practices of cloud DCN deployment based on real-world cases to help readers better understand how to build cloud DCNs. Finally, this book introduces DCN openness and some of the hottest forward-looking technologies. In summary, you can use this book as a reference to help you to build secure, reliable, efficient, and open cloud DCNs. It is intended for technical professionals of enterprises, research institutes, information departments, and DCs, as well as teachers and students of computer network-related majors in colleges and universities. Authors Lei Zhang Mr. Zhang is the Chief Architect of Huawei's DCN solution. He has more than 20 years' experience in network product and solution design, as well as a wealth of expertise in product design and development, network planning and design, and network engineering project implementation. He has led the design and deployment of more than 10 large-scale DCNs for Fortune Global 500 companies worldwide. Le Chen Mr. Chen is a Huawei DCN Solution Documentation Engineer with eight years' experience in developing documents related to DCN products and solutions. He has participated in the design and delivery of multiple large-scale enterprise DCNs. Mr. Chen has written many popular technical document series, such as DCN Handbook and BGP Topic.

The growth in public and private clouds spend is vastly outpacing the growth in overall IT spend. The change is so fast that traditional networking and security vendors are unable to keep pace with it. IT is looking at ways to keep up with the elastic demand and expectations from applications and the users in the world of Clouds. This trend is not only seen in large organizations but also observed in small and medium businesses. VMware NSX is the game changer with its network and security virtualization to re-define data centers and the enabler to build and run private clouds. VMware NSX is also the integration point between private and public cloud with its offering such as VMware Cloud on AWS. VMware NSX with its sophisticated, powerful and at the same time flexible architecture, gives the same feature and power to small and medium businesses as it has given it to large enterprises and service providers covering all verticals. This book will help not only SMB but also large organizations as well to adopt this technology because it is seen that other large enterprises started their data center transformation journey with a small footprint. After realizing the huge impact and benefits of NSX, these large enterprises grew from small to medium or even large footprint in a short period.Aim of this books is also to give readers, architects, engineers the necessary tool and techniques that they can use to transform their legacy data center architecture to software defined private cloud based architecture. It discussed a recipe of success, a well-orchestrated path to success, a step by step approach to implement network and security virtualization that is proven and adopted by many in the industry.

This handbook offers a comprehensive review of the state-of-the-art research achievements in the field of data centers. Contributions from international, leading researchers and scholars offer topics in cloud computing, virtualization in data centers, energy efficient data centers, and next generation data center architecture. It also comprises current research trends in emerging areas, such as data security, data protection management, and network resource management in data centers. Specific attention is devoted to industry needs associated with the challenges faced by data centers, such as various power, cooling, floor space, and associated environmental health and safety issues, while still working to support growth without disrupting quality of service. The contributions cut across various IT data technology domains as a single source to discuss the interdependencies that need to be supported to enable a virtualized, next-generation, energy efficient, economical, and environmentally friendly data center. This book appeals to a broad spectrum of readers, including server, storage, networking, database, and applications analysts, administrators, and architects. It is intended for those seeking to gain a stronger grasp on data center networks: the fundamental protocol used by the applications and the network, the typical network technologies, and their design aspects. The Handbook of Data Centers is a leading reference on design and implementation for planning, implementing, and operating data center networks.

Handbook on Data Centers

Building VMware NSX Powered Clouds and Data Centers for Small and Medium Businesses

CCNA Data Center DCICT 200-155 Official Cert Guide

Demystifying HCI

A Complete Guide to Planning, Designing and Building a Cloud Data Center

The Enterprise Cloud

Data-Driven Policy Impact Evaluation

In this book readers will find technological discussions on the existing and emerging technologies across the different stages of the big data value chain. They will learn about legal aspects of big data, the social impact, and about education needs and requirements. And they will discover the business perspective and how big data technology can be exploited to deliver value within different sectors of the economy. The book is structured in four parts: Part I "The Big Data Opportunity" explores the value potential of big data with a particular focus on the European context. It also describes the legal, business and social dimensions that need to be addressed, and briefly introduces the European Commission's BIG project. Part II "The Big Data Value Chain" details the complete big data lifecycle from a technical point of view, ranging from data acquisition, analysis, curation and storage, to data usage and exploitation. Next, Part III "Usage and Exploitation of Big Data" illustrates the value creation possibilities of big data applications in various sectors, including industry, healthcare, finance, energy, media and public services. Finally, Part IV "A Roadmap for Big Data Research" identifies and prioritizes the cross-sectorial requirements for big data research, and outlines the most urgent and challenging technological, economic, political and societal issues for big data in Europe. This compendium summarizes more than two years of work performed by a leading group of major European research centers and industries in the context of the BIG project. It brings together research findings, forecasts and estimates related to this challenging technological context that is becoming the major axis of the new digitally transformed business environment.

Data Center 2.0: The Sustainable Data Center is an in-depth look into the steps needed to transform modern-day data centers into sustainable entities. A sustainable data center should be environmentally viable, economically equitable, and socially bearable. Creating sustainable data centers is not a technical problem but an economic problem to be solved. This book takes a conceptual approach to the subject of data centers and sustainability. It offers at least multiple views and aspects on sustainable data centers to allow readers to gain a better understanding and provoke thoughts on how to create sustainable data centers. "Data Center 2.0, is not so much about technology but about people, society and economic development. By helping readers understand that even if Data Centers, enabling the Digital economy, are contributing a lot to energy saving, they need to be sustainable themselves; Rien Dijkstra is on the right track. When explaining how to build sustainable Data Centers, through multi disciplinary approach, breaking the usual silos of the different expertise, Rien Dijkstra is proposing the change of behavior needed to build sustainable Data Centers. Definitely it is about people, not technology." Paul-Francois Cattier Global Senior Vice-President Data Center - Schneider Electric "In Data Center 2.0 The Sustainable Data Center author Rien Dijkstra has gone several steps further in viewing the data center from the perspective of long term ownership and efficiency in combination with treating it as a system. It's an excellent read with many sections that could be extracted and utilized in their own right. I highly recommend this read for IT leaders who are struggling with the questions of whether to add capacity (co-locate, buy, build, or lease) or how to create a stronger organizational ownership model for existing data center capacity. The questions get more complex every year and the risks more serious for the business. The fact that you're making a business critical decision that must stand the test of technology and business change over 15 years is something you shouldn't take lightly." Mark Thiele President and Founder Data Center Pulse "Data centers used to be buildings to house computer servers along with network and storage systems, a physical manifestation of the Digital Economy. Internet of Things, the digitization of about everything in and around us, brings many profound changes. A data center is the place where it all comes together. Physical and digital life, fueled by energy and IT, economical and social demands and needs and not to forget sustainability considerations. Sustainable data centers have a great potential to help society to optimize the use of resources and to eliminate or reduce wastes of capital, human labor and energy. A data center in that sense is much more than just a building for servers. It has become a new business model. Data center 2.0 is a remarkable book that describes the steps and phases to facilitate and achieve this paradigm." John Post Managing Director - Foundation Green IT Amsterdam region

If you want to study, build, or simply validate your thinking about modern cloud native data center networks, this is your book. Whether you're pursuing a multitenant private cloud, a network for running machine learning, or an enterprise data center, author Dinesh Dutt takes you through the steps necessary to design a data center that's affordable, high capacity, easy to manage, agile, and reliable. Ideal for network architects, data center operators, and network and containerized application developers, this book mixes theory with practice to guide you through the architecture and protocols you need to create and operate a robust, scalable network infrastructure. The book offers a vendor-neutral way to look at network design. For those interested in open networking, this book is chock-full of examples using open source software, from FRR to Ansible. In the context of a cloud native data center, you'll examine: Clos topology Network disaggregation Network operating system choices Routing protocol choices Container networking Network virtualization and EVPN Network automation

A highly detailed guide to performing powerful attack vectors in many hands-on scenarios and defending significant security flaws in your company's infrastructure Key Features Advanced exploitation techniques to breach modern operating systems and complex network devices Learn about Docker breakouts, Active Directory delegation, and CRON jobs Practical use cases to deliver an intelligent endpoint-protected system Book Description It has always been difficult to gain hands-on experience and a comprehensive understanding of advanced penetration testing techniques and vulnerability assessment and management. This book will be your one-stop solution to compromising complex network devices and modern operating systems. This book provides you with advanced penetration testing techniques that will help you exploit databases, web and application servers, switches or routers, Docker, VLAN, VoIP, and VPN. With this book, you will explore exploitation abilities such as offensive PowerShell tools and techniques, CI servers, database exploitation, Active Directory delegation, kernel exploits, cron jobs, VLAN hopping, and Docker breakouts. Moving on, this book will not only walk you through managing vulnerabilities, but will also teach you how to ensure endpoint protection. Toward the end of this book, you will also discover post-exploitation tips, tools, and methodologies to help your organization build an intelligent security system. By the end of this book, you will have mastered the skills and methodologies needed to breach infrastructures and provide complete endpoint protection for your system. What you will learn Exposure to advanced infrastructure penetration testing techniques and methodologies Gain hands-on experience of penetration testing in Linux system vulnerabilities and memory exploitation Understand what it takes to break into enterprise networks Learn to secure the configuration management environment and continuous delivery pipeline Gain an understanding of how to exploit networks and IoT devices Discover real-world, post-exploitation techniques and countermeasures Who this book is for If you are a system administrator, SOC analyst, penetration tester, or a network engineer and want to

take your penetration testing skills and security knowledge to the next level, then this book is for you. Some prior experience with penetration testing tools and knowledge of Linux and Windows command-line syntax is beneficial.

Designing Warehouse-Scale Machines, Third Edition

IBM SmartCloud: Building a Cloud Enabled Data Center

The complete guide to planning, configuring, and managing Application Centric Infrastructure

Data Center Virtualization Fundamentals

The Policy Driven Data Center with ACI

Defend your systems from methodized and proficient attackers

Cloud Computing

Cloud Networking: Understanding Cloud-Based Data Center Networks explains the evolution of established networking technologies into distributed, cloud-based networks. Starting with an overview of cloud technologies, the book explains how cloud data center networks leverage distributed systems for network virtualization, storage networking, and software-defined networking. The author offers insider perspective to key components that make a cloud network possible such as switch fabric technology and data center networking standards. The final chapters look ahead to developments in architectures, fabric technology, interconnections, and more. By the end of the book, readers will understand core networking technologies and how they're used in a cloud data center. Understand existing and emerging networking technologies that combine to form cloud data center networks Explains the evolution of data centers from enterprise to private and public cloud networks Reviews network virtualization standards for multi-tenant data center environments Includes cutting-edge detail on the latest switch fabric technologies from the networking team in Intel Using the policy driven data center approach, networking professionals can make their data center topologies faster to configure and more portable. They can also build cloud infrastructure faster than before. All of this can be achieved by using REST and python together with the latest Cisco technology called Application Centric Infrastructure (ACI). The Policy Driven Data Center with ACI helps Architects, IT administrators, Network Administrators and Engineers to build and troubleshoot multipurpose cloud architectures. Cisco data center experts Lucien Avramov and Maurizio Portolani thoroughly explain the architecture, concepts, and methodology of the policy driven data center. The authors cover the key technology concepts, the tools for modern data centers including python scripting and REST, the design consideration and methodology of modern fabrics including VXLAN-based forwarding, the policy model theory and concepts, how to build a multi-hypervisor and bare-metal infrastructure including OpenStack, the service integration, and advanced telemetry capabilities for troubleshooting. The book concludes by discussing universal data center switch architecture concepts in order to clearly understand switching concepts and the newer trends in the Nexus 9000 product portfolio. Drawing on their extensive experience in enterprise engagements, the authors present effective solutions for virtualized data centers, high performance computing, ultra-low latency environments, and large-scale data centers. In addition to discussing relevant concepts and methodologies, the authors address design considerations associated with hardware, topologies, automation, and scalability. Technical professionals will find invaluable guidance on migrating current data center environments to a policy driven data center.

Design, operate, and troubleshoot advanced Cisco IP multicast in enterprise, data center, and service provider networks IP Multicast, Volume II thoroughly covers advanced IP multicast designs and protocols specific to Cisco routers and switches. It offers a pragmatic discussion of common features, deployment models, and field practices for advanced Cisco IP multicast networks, culminating with commands and methodologies for implementation and advanced troubleshooting. After fully discussing inter-domain routing and Internet multicast, the authors thoroughly explain multicast scalability, transport diversification, and multicast MPLS VPNs. They share in-depth insights into multicast for the data center, a full chapter of best-practice design solutions, and a start-to-finish troubleshooting methodology designed for complex environments. Reflecting the authors' extensive experience with service provider and enterprise networks, IP Multicast, Volume II will be indispensable to IP multicast engineers, architects, operations technicians, consultants, security professionals, and collaboration specialists. Network managers and administrators will find its case studies and feature explanations especially valuable. Understand the fundamental requirements for inter-domain multicast Design control planes for identifying source and receiver, as well as the downstream control plane Support multicast transport where cloud service providers don't support native multicast Use multicast VPNs to logically separate traffic on the same physical infrastructure Explore the unique nuances of multicast in the data center Implement Virtual Port Channel (vPC), Virtual Extensible LAN (VXLAN), and Cisco's Application Centric Infrastructure (ACI) Design multicast solutions for specific industries or applications Walk through examples of best-practice multicast deployments Master an advanced methodology for troubleshooting large IP multicast networks

The complete guide to provisioning and managing cloud-based Infrastructure as a Service (IaaS) data center solutions Could computing will revolutionize the way IT resources are deployed, configured, and managed for years to come. Service providers and customers each stand to realize tremendous value from this paradigm shift-if they can take advantage of it. Cloud Computing brings together the realistic, start-to-finish guidance they need to plan, implement, and manage cloud solution architectures for tomorrow's virtualized data centers. It introduces cloud 'newcomers' to essential concepts, and offers experienced operations professionals detailed guidance on delivering Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). This book's replicable solutions and fully-tested best practices will help enterprises, services providers, consultants, and Cisco partners meet the challenge of provisioning end-to-end cloud infrastructures. Drawing on extensive experience working with leading cloud vendors and integrators, the authors present detailed operations workflow examples, proven techniques for operating cloud-based network, compute, and storage infrastructure: a comprehensive management reference architecture; and a complete case study demonstrating rapid, lower-cost solutions design. Cloud Computing will be an indispensable resource for all network/IT professionals and managers involved with planning, implementing, or managing the next generation of cloud computing services.

• Review the key concepts needed to successfully deploy and cloud-based services •Transition common enterprise design patterns and use cases to the cloud •Master architectural principles and infrastructure design for 'real-time' managed IT services •Understand the Cisco approach to cloud-related technologies, systems, and services •Develop a cloud management architecture using ITIL, TMF, and ITU-TMN standards •Implement best practices for cloud service provisioning, activation, and management •Automate cloud infrastructure to simplify service delivery, monitoring and assurance •Choose and implement the right billing/chargeback approaches for your business •Design and build IaaS services, from start to finish •Manage the unique capacity challenges associated with sporadic, real-time demand •Provide a consistent and optimal cloud user experience This book is part of the Networking Technology Series from Cisco Press, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.